

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

ORIGINAL

In the Matter of

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Preparation for International )  
Telecommunication Union World )  
Radiocommunication Conferences )

IC Docket No. 94-31

To the Commission:

COMMENTS OF COMSAT MOBILE COMMUNICATIONS

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OFFICE OF SECRETARY

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## SUMMARY

COMSAT Mobile Communications ("CMC") believes that the prime objective for the United States at the 1995 World Radiocommunication Conference ("WRC-95") is to ensure that the 2 GHz global Mobile Satellite Service (MSS) bands at 1980-2010 MHz and 2170-2200 MHz allocated at WARC-92 are usable by global MSS systems. Accordingly, we propose that the United States undertake as its top priority at WRC-95 to make the WARC-92 allocated MSS bands available for use before the year 2000.

The United States must make every effort to eliminate technical, allocation and regulatory constraints on the use of the 2 GHz MSS bands. Accordingly, CMC suggests that the United States propose a new provision at WRC-95 to implement a transition plan for international fixed service operations that occupy the 2 GHz bands. In addition, the Commission must address domestic constraints on 2 GHz MSS systems in its companion 2 GHz domestic rule making proceeding.

CMC generally supports the Commission's proposals in the Second NOI for MSS feeder link bands. There is a critical need to allocate suitable bands for non-geostationary orbit MSS ("NGSO MSS") feeder links and to make the resulting changes to RR 2613 that are required to facilitate the use of fixed satellite service ("FSS") bands by NGSO MSS systems.

We further agree with the Commission that there is a strong need to identify new global MSS allocations at WRC-95. However, because of the complex issues involved we do not think it is

realistic to expect that action can be taken on such new allocations at the Conference. We believe a more achievable goal at WRC-95 is for the Conference to identify new MSS bands below 3 GHz, to implement a program to study these candidate bands, and to come back at WRC-97 to allocate the most appropriate bands to new MSS.

CMC also supports the Commission's proposal to extend the Region 2 primary MSS band at 1675-1710 MHz to a global, primary allocation. However, we believe WRC-95 would not allocate this uplink band in isolation without a concomitant downlink band below 2 GHz.

In addition, we agree with the Commission's proposal to eliminate the secondary MSS allocations (earth-to-space) in Region 2 in the band 1930-1970 MHz, and the consequential elimination (unstated) of the (space-to-earth) Region 2 MSS secondary band at 2120-2160 MHz.

CMC questions, however, whether the Commission should trade-off the Region 2 primary MSS allocations at 1970-1980 MHz and especially the global primary MSS in 1980-1985 MHz which could be used elsewhere around the world, if not in the United States. We believe these last two modifications will cause confusion, with nothing to be gained by the United States.

CMC supports the efforts of the Voluntary Group of Experts ("VGE") to simplify the Radio Regulations and notes that the VGE Report is a major agenda item for WRC-95. However, we are concerned that this item could consume too much of the Conference

resources and time and make it difficult to resolve the urgent MSS issues at WRC-95.

Regarding the agenda for the WRC-97, we propose that high priority be given to any unresolved MSS issues remaining from WRC-95. In particular, we expect that WRC-97 will need to act on new MSS allocations for service and feeder links.

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To the Commission:

**COMMENTS OF COMSAT MOBILE COMMUNICATIONS**

COMSAT Mobile Communications ("CMC"), a business unit of COMSAT Corporation, hereby submits its comments in response to the Second Notice of Inquiry ("Second NOI") in IC Docket No. 94-31 regarding preparations for the 1995 International Telecommunication Union ("ITU") World Radiocommunication Conference ("WRC-95").<sup>1</sup>

The Second NOI seeks comments on preliminary U.S. proposals for WRC-95 which are intended to facilitate the implementation of global mobile satellite services ("MSS") and on other subjects raised in the initial Notice of Inquiry ("Notice")<sup>2</sup> in this proceeding including the agendas for WRC-97 and WRC-99. CMC filed Comments and Reply Comments on the initial Notice on July 15, 1994, and August 5, 1994, respectively. We welcome the opportunity presented by the Second Notice to provide additional comments on the issues of major importance to CMC and to the MSS industry that will be considered at WRC-95.

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<sup>1</sup>Second Notice of Inquiry, IC Docket No. 94-31, released January 31, 1995, ("Second NOI").

<sup>2</sup>Notice of Inquiry, IC Docket No. 94-31, 9 FCC Rcd 2430 (1994) ("Notice").

## I. INTRODUCTION

CMC commends the Commission for the way its representatives have worked harmoniously alongside those of the private sector and other government agencies in the preparatory work for WRC-95 being conducted in the Industry Advisory Committee ("IAC"). The Second NOI released by the Commission is an accurate and concise compilation of the IAC's efforts to date on the many complex MSS issues discussed in the IAC Interim Report.<sup>3</sup>

CMC believes that the United States' first priority at WRC-95 is to ensure that the existing bands allocated for global MSS at the 1992 World Administrative Radio Conference ("WARC-92") -- the 1.9/2.1 GHz bands which are the subject of a pending rule making at the Commission -- are, in fact, usable by the MSS systems that will operate in those bands. In order to accomplish this goal, the United States must ensure that any technical, allocation or regulatory constraints imposed on MSS are reduced or eliminated. Accordingly, it is imperative that the United States at WRC-95 seek to advance the date for global availability of the 1.9/2.1 GHz bands from the year 2005 to before the year 2000.

CMC generally supports the Commission's proposals in the Second NOI to obtain appropriate spectrum for MSS feeder links. There is a critical need to allocate suitable bands for non-geostationary orbit MSS ("NGSO MSS") feeder links and to make the

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<sup>3</sup>FCC Industry Advisory Committee for the ITU 1995 World Radiocommunication Conference Interim Report, December 16, 1994 ("IAC Interim Report").

resulting changes to RR 2613 that are required to facilitate the use of fixed satellite service ("FSS") bands by NGSO MSS systems.

Regarding proposals for new MSS allocations, we agree with the Commission that WRC-95 should focus on identifying candidate bands for future MSS spectrum allocations. However, we do not believe that the Conference should limit its consideration to the bands listed at Table 5 of the Second NOI. Given the many questions regarding the feasibility of sharing the 2 GHz bands with terrestrial users in the United States and issues related to the Commission's domestic 2 GHz allocation proceeding, it is not likely, in our view, to expect that these issues will be resolved before the Conference convenes in October 1995, or that final allocations for new MSS spectrum can be obtained at the Conference. Accordingly, we believe that a more achievable goal for the United States at WRC-95 is for the Conference to identify potential new MSS bands below 3 GHz, to implement a program to study these candidate bands over the next two years, and to come back at WRC-97 and allocate the most appropriate bands to new MSS operations.

CMC supports the Commission's proposal to extend the Region 2 primary MSS band at 1675-1710 MHz to a global, primary allocation. However, we believe WRC-95 would not allocate this uplink band in isolation without a concomitant downlink band below 2 GHz.

CMC also agrees with the Commission's proposal to eliminate the Secondary MSS allocations (earth-to-space) in Region 2 in the



band 1930-1970 MHz, and the consequential elimination (unstated) of the (space-to-earth) Region 2 MSS Secondary band at 2120-2160 MHz.

CMC, however, questions whether the Commission should trade-off the Region 2 Primary MSS allocations at 1970-1980 MHz and especially the Global Primary MSS in 1980-1985 MHz which could be used elsewhere around the world, if not in the United States. We believe these last two modifications will cause confusion, with nothing to be gained by the U.S.

Finally, we support the proposals in the Second NOI to relieve the constraints on the bands 1610-1626.5 MHz and 2483.5-2500 MHz and make these bands more usable for the so-called "Big LEO" systems, we do not comment on the Commission's specific proposals. CMC has no current plans to use these bands.

**II. THE FIRST PRIORITY FOR THE U.S. AT WRC-95 IS TO ENSURE THAT THE 2 GHZ MSS GLOBAL ALLOCATIONS MADE AT WARC-92 ARE USABLE BEFORE THE YEAR 2000**

In CMC's opinion, the most important objective to be achieved by the U.S. delegation at WRC-95 is to ensure that MSS systems can actually make efficient use of the 2 GHz MSS bands allocated at WARC-92. If the United States is to complete the work it started at WARC-92, it must ensure that the 1.9/2.1 GHz bands become usable MSS bands rather than simply allocated bands with little utility for MSS.

As things stand, the 2 GHz bands will not become available globally until the year 2005. Portions of the WARC-92 allocated MSS bands will be used in the United States for terrestrial

personal communications services ("PCS") and the remaining band segments will not be usable unless solutions are found to the problems with the present Broadcast Auxiliary Service ("BAS") and Fixed Service ("FS") occupants in the Commission's pending rule making.<sup>4</sup>

WRC-95 must successfully address advancing the date of availability of the 2 GHz bands and must take actions to relieve the other global constraints on MSS use discussed below. If this can be done, and if solutions can be found in the domestic 2 GHz proceeding, the commitments to construct advanced MSS systems using these bands can proceed.

MSS systems are being planned, final design decisions are being made on payload specifications, and financial investments have been committed to actually build and launch global MSS systems. These systems will use the WARC-92 bands to bring new personalized mobile satellite services to the global marketplace before this century is over. For example, the Inmarsat-P Affiliate system, in which CMC is an investor, has raised \$1.4 billion to build and deploy its MSS system in the 2 GHz band. Other MSS providers, including AMSC and Celsat, also have advanced plans to use the 2 GHz band for MSS systems in the near future, and several of the Big LEO licensees have stated their interest in using 2 GHz spectrum for second generation handheld-MSS satellite systems.

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<sup>4</sup>See Notice of Proposed Rule Making, ET Docket No. 95-18, RM-7927, released January 31, 1995 ("2 GHz NPRM").

In order to make the 2 GHz bands usable for these planned MSS systems, the U.S. must advance proposals at WRC-95 which will eliminate or reduce the constraints imposed on global MSS systems operating in these bands. Chief among these proposals, is the need to advance the date of entry into force of the 2 GHz allocations for global MSS systems. In addition, the Conference should adopt a realistic transition plan for MSS and fixed services currently occupying the 2 GHz band.

**A. The U.S. Must Vigorously Support the Advancement of the Dates of Entry into Force of the 2 GHz MSS Bands**

There is an urgent need for WRC-95 to take appropriate action to facilitate the use of the MSS bands allocated at WARC-92 by modifying Footnote 746B in the Table of International Frequency Allocations to advance the date of global availability of the bands 1980-2010 MHz and 2170-2200 MHz from the year 2005 to before the year 2000. Such action would be consistent with U.S. Footnote 746C, which indicates that these bands will be available in the United States beginning in 1996.

Furthermore, there is every reason for the United States to advocate early use of these bands on a global basis in view of its position at WARC-92 that these bands would be available in the United States in 1996. Motorola has argued in its comments to the initial Notice in this proceeding that the date should not be moved forward and that the U.S. should consider a change to

footnote 746C.<sup>5</sup> Motorola attempts to justify its position on the basis that the Future Land Mobile Public Telecommunication System ("FLMPTS") standard will not be available until at least 1998 and that any MSS system based on this standard could not be available until 2005. CMC opposes this position for a number of reasons stated in our Reply Comments filed August 5, 1994. Motorola's position is inconsistent with U.S. positions at WARC-92 and, in our view, it is not in the interest of the United States, or for that matter the world, to wait for a FLMPTS standard to be developed in the ITU-R before advancing the date of availability of the 2 GHz bands.

The ITU-R TG-8/3 studies have clearly identified the need for MSS access to the 2 GHz MSS bands before the year 2005, given the number of MSS satellite networks filed to operate in these bands and the likelihood that the Big LEO bands at 1.6/2.4 GHz will not be sufficient to accommodate future requirements on a global basis. In our Comments on the initial Notice in this proceeding we identified some 20 different systems which have filed with the ITU-BR for the 2 GHz bands since the conclusion of WARC-92.<sup>6</sup>

In view of the above, CMC proposes that the United States, at WRC-95, seek to modify Footnote RR 746B to advance the date of entry into force of the 2 GHz MSS allocation to before the year

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<sup>5</sup>See Motorola Comments, IC Docket No. 94-31, filed July 15, 1994, at 6-7.

<sup>6</sup>See CMC Comments, filed July 15, 1994, at 7 and Table 1.

2000 to facilitate the timely introduction of MSS networks subject to coordination with affected Administrations.

**B. The U.S. Must Work to Eliminate Technical, Allocation, and Regulatory Constraints on the Use of the 2 GHz Bands**

Along with the date change, which is one of several conditions necessary to make 2 GHz an actual useable MSS band, the U.S. should propose suitable MSS/FS transition plans at WRC-95. Studies conducted by ITU-R TG-2/2 have concluded that co-channel sharing between NGSO MSS systems and existing FS systems in the 2 GHz MSS (Space-to-Earth) bands would generally be feasible in the short to medium time frame, subject to detailed bilateral coordination. However, the ITU-R TG-2/2 studies also have shown that co-channel sharing between NGSO MSS systems and existing FS systems in the 2 GHz MSS (Earth-to-Space) bands would not generally be feasible unless MSS systems use spectrum corresponding to FS channelization gaps or to areas with low-density FS usage.

This means that MSS sharing with existing FS systems in both the uplink and downlink MSS bands will in most cases be feasible in the short to medium term, especially while MSS spectrum requirements are modest. However, in the medium to long term, as MSS traffic and spectrum requirements build, sharing will become more difficult -- especially in the MSS uplink bands -- and it is crucial that a transition plan be implemented to reduce the FS operations in these bands. These plans could include a near-immediate "freezing" of new FS stations and/or troposcatter

systems in the uplink band (1980-2010 MHz) and progressive Power Flux Density ("PFD") escalation in the MSS downlink band (less stringent PFD limits than those now stipulated by RR 2655--in Footnote 746B).

CMC proposes that the United States put forward a new provision, RR 746D, for the implementation of transitional arrangements for the fixed service to facilitate the use of the 1980-2010 MHz and 2170-2200 MHz bands by the MSS, taking into account the studies conducted by the ITU-R. Task Group 2/2 has indicated a need for arrangements to freeze new FS implementations as well as early transitional arrangements for the FS especially in the MSS E-S bands. Such action could be considered appropriate under WRC-95 agenda items 2.1b or 2.1a. Accordingly, CMC proposes the following text for a new provision RR 746D:

ADD 746D Administrations responsible for coordination of MSS satellite networks under Resolution 46b is (WARC-95) pursuant to RR 746B shall make all practicable efforts in coordination with affected Administrations to ensure that unacceptable interference is not caused to assignments to receiving Fixed Service stations in the 2160-2200 MHz band notified and brought into use prior to January 1, 1999.<sup>5</sup> Administrations shall make all practicable efforts to avoid the implementation of new Fixed Service systems in the band 2170-2200 MHz after January 1, 1996.<sup>6</sup> Administrations shall make all

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<sup>5</sup>The first sentence emphasizes the need to protect already existing FS systems in the 2160-2200 MHz bands. Resolution 46 coordination implies that FS systems which will be brought into use within the next three years can be considered.

<sup>6</sup>Given the medium-to-long term sharing difficulties between the FS and MSS in the MSS space-to-earth band, the implementation of new FS systems should be frozen as soon as possible.

practicable efforts to cease the implementation of new Fixed Service stations in the band 1980-2010 MHz from January 1, 1996.<sup>7</sup> Administrations shall cease operation of tropospheric scatter systems in the band 1980-2010 MHz by January 1, 1999.<sup>8</sup>

**C. The U.S. Must Address Domestic Constraints on 2 GHz MSS Systems**

As the Commission is keenly aware, there are severe constraints within the United States on the use of the WARC-92 2 GHz MSS allocated bands. First, of course, is the fact that in the PCS proceeding the Commission allocated the 1980-1990 MHz band to terrestrial PCS instead of allocating this band segment to MSS, as was adopted at WARC-92.<sup>9</sup> Moreover, the remaining WARC-92 uplink MSS band segments at 1990-2010 MHz are used in the United States by Electronic News Gathering ("ENG") operations in the BAS bands, and the corresponding MSS downlink band segments at 2180-2200 Mhz are occupied in the United States by private and

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<sup>7</sup>Given the extreme short-to-medium term sharing difficulties between the FS and MSS in the MSS Earth-to-Space band, the implementation of new FS systems must be frozen as soon as possible. The continued deployment of FS systems in the MSS Earth-to-Space band will render the band totally unusable by the MSS. It should be noted that it would not be meaningful to develop EIRP limits on new FS stations to protect MSS satellite receivers, as the existing FS population already gives rise to unacceptable co-channel interference.

<sup>8</sup>Given that tropospheric FS systems in the MSS Earth-to-Space band will completely disrupt the operation of MSS systems, the operation of such FS systems should be terminated by the time MSS is introduced in the band. The date of January 1, 1999 may be considered, consistent with the effective dates of entry into force of the 2 GHz MSS bands.

<sup>9</sup>See Memorandum Opinion and Order, GEN Docket No. 90-314, 9 FCC Rcd 5947 (1994) ("PCS Reconsideration Order").

common carrier fixed microwave facilities. The Commission appears to recognize that the current ENG operations are not compatible with MSS operations and has indicated its intent to resolve this problem in the 2 GHz rule making proceeding now underway.

While we believe there are workable solutions to this frequency sharing problem, the issues are complex and require orderly and careful consideration. Thus, it is unlikely that the 2 GHz rule making proceeding will be concluded in sufficient time to take account of the solutions before WRC-95. Moreover, as discussed below under the section concerning proposals for new MSS allocations at WRC-95, the Commission is currently proposing to expand MSS allocations above 2010 MHz and, therefore, use more of the existing ENG auxiliary broadcast bands. Such an approach will exacerbate the problem in the United States between ENG and MSS operations. Given these constraints on 2 GHz MSS systems, it may be difficult for other countries at WRC-95 to accept the Commission's proposal to expand the MSS bands when it remains uncertain whether the WARC-92 bands, much less any expanded MSS bands, will be usable within the United States. Further work may need to be done on this item, prior to WRC-97, if the U.S. desires to seek global acceptance of this proposal.

### **III. THE U.S. SHOULD ACTIVELY PROMOTE ITS PROPOSED NGSO MSS FEEDER LINK ALLOCATIONS AT WRC-95**

CMC wholeheartedly supports the Commission's aggressive approach to the accommodation of feeder links for emerging NGSO



MSS systems. It is very encouraging to see, within the Second NOI, proposals for each of the three major frequency bands (e.g. C, Ku and Ka-band) which meet or exceed the minimum spectrum requirements developed by the MSS community. It is also encouraging to note that the feeder link proposals are very much in line with international views, especially those of ITU-R TG 4/5, as regards the way in which NGSO MSS feeder links can be accommodated without undue regulatory burden (RR 2613). This approach will help to foster acceptance of the proposals at WRC-95 and, if adopted by the Conference, will provide MSS feeder links with the required operational flexibility.

In CMC's view, the C-band feeder link proposal is critical to ensuring the success of future MSS systems and as such must be vigorously pursued. This view is based upon the fact that two U.S. Big LEO applicants have requested use of this band as well as the Inmarsat affiliate ICO Global Communications ("ICO-P").<sup>10</sup> The bands chosen in the Second NOI proposal are believed to be the most promising of all those considered as potential candidates. The extensive work done internationally on the 5000-5250 MHz band, and the proposed footnote to protect MLS systems in this band, should help allay any concerns from the international aeronautical community.<sup>11</sup>

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<sup>10</sup>See Second NOI, note 72.

<sup>11</sup>CMC supports the feeder link proposal contained in the Second NOI for the 5000-5250 MHz band. The modified footnote associated with this proposal (MOD 796) acknowledges that current aviation use of part of this band for microwave landing systems (MLS) shall take precedence over any NGSO MSS feeder link use.

CMC has some concern that there is no specific mention of protecting the FSS GSO Allotment Plan in the 6825-7075 MHz band. Objections on this point at WRC-95 could threaten the Allotment Plan proposal. CMC, therefore, recommends that consideration be given to developing a footnote which would assure concerned countries that the Allotment Plan is protected while not adversely impacting the potential use of the band by MSS feeder links.<sup>12</sup>

The Second NOI offers two frequency band pairing possibilities for supporting NGSO MSS feeder link requirements at

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This footnote also maintains sufficient flexibility to allow MLS use of the band to expand in portions of this band if required in the future, with all of the accompanying required rights, without precluding possible use of the band for NGSO MSS feeder links should future expansion of MLS operations not materialize.

<sup>12</sup>As regards changes to Article 29 of the Radio Regulations, CMC's concern with the Allotment Plan, as raised above, could be addressed by adding to the Second NOI proposed modification of RR 2631 as follows (note underlined text is CMC proposed additional text):

b) In the frequency band 6825-7075 MHz (Space-to-Earth) and 12.75-13.25 GHz (Space-to-Earth) which feeder link networks of the mobile-satellite service share with the fixed-satellite service (Earth-to-Space), the maximum power flux-density produced at the geostationary-satellite orbit by any feeder link network space station shall not exceed -168 dB(W/m<sup>2</sup>) in any 4 kHz band. These values apply within +/- 5° of the geostationary-satellite orbit. These power flux density limits may only be exceeded if single-entry increase in the equivalent satellite link noise temperature into geostationary FSS satellite networks in the 7025-7075 MHz band does not exceed 6% or if the allotment of any Administration under Appendix 30 B is not affected, in accordance with the criteria prescribed therein for determining whether an allotment is affected.

Ku-band up to 19.2 GHz. CMC believes that the most effective strategy for obtaining a Ku-Band allocation is to maintain maximum flexibility for band pairing possibilities in this band, particularly considering that the 15.4-15.7 GHz band can be proposed in either the uplink or downlink direction.<sup>13</sup> We believe that the various bands proposed in the Second NOI could be paired in a number of ways in order to support the MSS feeder link requirement. For example, as an alternative to the band pairing suggested in the second NOI, CMC believes that consideration should be given to pairing the 12.75-13.25 GHz (Space-to-Earth) band with the 15.4-15.7 GHz band in the (Earth-to-Space) direction. Other possibilities also could arise at WRC-95 depending upon the overall negotiations which take place

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<sup>13</sup>In order to maintain maximum flexibility in the possible band pairing combinations for a Ku-band NGSO MSS feeder link allocation, CMC proposes that in addition to the space-to-Earth direction proposal contained in Table 1 of the Second NOI, the Commission retain the possibility of proposing this band in the Earth-to-space direction as well. ITU-R Task Group 4/5 concluded that this band holds possibilities for NGSO MSS feeder link use in either direction of transmission and holding this alternative direction of transmission open as an option would improve the chances of successfully allocating a workable Ku-Band pair at WRC-95. Moreover, it is our understanding that studies may be available that examine the feasibility of sharing MSS feederlinks with certain government aeronautical navigational systems. If such studies exist, the Commission should make them available for further consideration in the IAC and in this proceeding.

at the Conference and the best way to deal with these is to keep as many options available as possible.<sup>14</sup>

Also at Ku-band, the band 18.9-19.2 GHz is being proposed in the reverse direction of transmission. As was concluded by ITU-R Task Group 4/5, this type of reverse direction of transmission operation in an FSS band is only feasible in bands lightly used by the FSS in the opposite direction. While this is presently true for FSS use of the 18.9-19.2 GHz band in the space-to-Earth direction, it should be noted that if this band becomes allocated in the Earth-to-space direction for NGSO MSS feeder link use, it could limit possible U.S. FSS use of this band in the future to applications which do NOT include a large number of earth stations. This is a point which the Commission should carefully consider, given the types of FSS system(s) which are currently proposed, or are expected to be proposed in the future, for operation in the 20/30 GHz bands.

Finally, in the Ku-band, it is noted that the Second NOI does not propose using the 13.75-14.00 GHz band for support of NGSO MSS feeder links. CMC agrees that it is not appropriate to include this band as a proposed feeder link band given the complex nature of sharing the band with existing services.

At Ka-band, CMC believes that the Second NOI feeder link proposal for a 500 MHz allocation at 20/30 GHz provides an overly

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<sup>14</sup>Again, given that the 12.75-13.25 GHz band is an Allotment Plan band, consideration needs to be given to developing a footnote which would assure the developing countries that the Allotment Plan bands are protected, while not adversely impacting the potential use of the band by MSS feeder links.

generous amount of spectrum. The number of NGSO MSS systems that can be expected to operate in this band may be very limited due to the technical difficulties associated with operation in this band. In addition, studies have shown that sharing between two NGSO MSS feeder links is feasible<sup>15</sup> and that such sharing would result in acceptable interference meeting the criteria set forth in ITU-R TG 4/5 for such systems, even under absolute worst case conditions.<sup>16</sup>

The prospect of sharing feeder link spectrum at 20/30 GHz directly reduces the overall feeder link spectrum requirement at Ka-band as shown in the estimates of feeder link spectrum requirements.<sup>17</sup> Moreover, the types of NGSO MSS systems being proposed for operation at Ka-band are quite technically sophisticated, and in many instances this sophistication can effectively reduce the overall feeder link spectrum requirements. For these reasons, CMC believes that the U.S. proposal for feeder link spectrum at Ka-band should be closer to the lower range of the perceived spectrum requirement (i.e. 200 MHz), rather than the upper limit (i.e. 500 MHz).<sup>18</sup>

In addition, any reduction in the total amount of spectrum proposed for Ka-band feeder links has the added benefit of

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<sup>15</sup>See Section 2.1.3.3.6 of ITU-R Task Group 4/5 Final Report.

<sup>16</sup> See Document U.S. CPM-95-27.

<sup>17</sup>See Second NOI, Table 2, p. 24.

<sup>18</sup>See Second NOI, Table 1, at 24.

strengthening the U.S proposal in that it will likely thwart many of the expected objections from the FSS community without restricting the operation of the NGSO MSS feeder links. It also adds flexibility to the U.S. proposals for WRC-95 in that there are many more possibilities for finding a suitable location within the Ka-band spectrum for a 200 MHz uplink/downlink pair, than for accommodating a 500 MHz band pair. Finally, it balances the Ka-band proposal with several of the other C-band and Ku-band proposals, where the Commission is proposing an allocation which is less than the maximum feeder link spectrum requirement.

#### **IV. NEW AND MODIFIED MSS SPECTRUM ALLOCATIONS**

##### **A. Proposals for Additional MSS Spectrum**

CMC has been an active participant in the Commission's WRC-95 Industry Advisory Committee, along with a number of other U.S. MSS and aerospace companies, since the IAC was formed last year. Recently, the IAC has made substantive progress on projecting the spectrum requirements needed to accommodate future growth in MSS (both "conventional MSS" and "PCS/MSS") and in considering candidate bands that WRC-95, or future Conferences, might allocate to MSS to accommodate growth in the MSS markets.

CMC fully supports the Commission's discussion of future MSS requirements which are identified in Table 4 of the Second NOI and which are derived directly from the IAC Interim Report. Nevertheless, we note that the agenda for WRC-95 gives a lower priority to consideration of additional MSS spectrum requirements

and new MSS allocations, than to efforts to facilitate the use of frequency bands already allocated to the mobile-satellite services at WARC-92.<sup>19</sup>

CMC strongly believes that additional MSS allocations are needed and justified. However, we do not believe that WRC-95 will be prepared to act on substantial proposals for new MSS allocations. The ground work has not been set internationally with the necessary studies and consideration of possible new MSS allocations within the ITU-R study groups or the CPM -- other than projections of MSS spectrum requirements.

Moreover, it is our understanding that the Commission is proposing to consider new MSS allocations in two separate, but related, proceedings. In the instant proceeding the Commission is preparing for WRC-95 and is proposing the following new international MSS allocations: (1) allocate the bands 2010-2025 MHz (Earth-to-Space) and 2160-2170 MHz (Space-to-Earth) as additions to the existing WARC-92 allocations;<sup>20</sup> and (2) upgrade the present MSS allocation in Region 2 in the band 1675-1710 MHz and make this a new MSS primary band in all three regions.

With regard to the first proposal, new MSS allocation at 2010-2025 MHz and 2160-2170 MHz, the Commission has indicated

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<sup>19</sup>Reference in the WRC-95 agenda to additional MSS allocations appears in item 3(d) which discusses the list of actions to be undertaken at WRC-97.

<sup>20</sup>We note that there is a discrepancy between the 35 MHz MSS band limits listed in the 2 GHz NPRM (i.e., 1990-2025 MHz (Earth-to-Space) and 2165-2200 MHz (Space-to-Earth)) and the 40 MHz uplink/downlink MSS pairing listed in the NOI (i.e., 1985-2025 MHz and 2160-2200 MHz).

that it will treat the merits of allocating the expanded 2 GHz bands to MSS in the United States in the 2 GHz rule making proceeding. As indicated earlier, we are currently addressing the 2 GHz rule making in discussions with other MSS operators and with the present terrestrial service operators in the proposed bands. While there may well be solutions, we believe there are serious difficulties to overcome before MSS could use these bands either in the U.S. or internationally. Also, because of the complex issues involved, it is doubtful that the Commission will conclude this 2 GHz rule making before WRC-95. For these reasons, we are not optimistic that WRC-95 will be able to take final action to allocate these bands.

Regarding the band 1675-1710 MHz, this band is presently occupied by the meteorological-satellite services ("MetSats") and meteorological aids services ("MetAids") on a primary basis. The Commission has proposed to make this band a MSS band in all three ITU Regions, instead of just Region 2. As the Commission has noted, in paragraph 34 of the Second NOI, Footnote RR 735A is operative in this band segment. Footnote RR 735A contains the proviso that MSS shall not cause interference to, nor constrain the development of, MetSats or MetAids in the 1675-1710 MHz band.

CMC agrees with the Commission and with the IAC recommendations that the United States should propose the 1675-1710 MHz global band as a candidate global MSS (Earth-to-Space) band at WRC-95. Of course this is contingent on a resolution of the continuing discussions taking place between the Commission,



NTIA and NOAA on the conditions for access to this band. We believe that these discussions can be favorably concluded, as indicated by the recently completed draft new ITU-R Recommendation regarding the feasibility of sharing between Metsats (S-to-E) and MSS (E-to-S) in the 1675-1710 MHz band.<sup>21</sup>

CMC has not performed any sharing studies of its own in regard to MSS sharing with the meteorological services in the 1675-1710 MHz band. Thus, we cannot add to the knowledge base provided by ITU-R Working Party 7C. However, we wish to point out that neither the Commission nor the IAC in its Interim Report has made any proposals for a companion 35 MHz (Space-to-Earth) MSS band to be utilized with the proposed (Earth-to-Space) MSS allocation at 1675-1710 MHz. It is difficult to see how WRC-95 would take action to allocate the 1675-1710 MHz band to MSS without consideration of a companion band.

We note, however, that a "virtual" MSS (Earth-to-Space) band has been in existence since 1992, at least for Region 2, in the so-called "Columbus" band at 1492-1525 MHz. We refer to this as a "virtual" band because MSS is effectively precluded from using this band in the United States. National Footnote RR 722C states that in the United States the 1492-1525 MHz band is allocated only for fixed and mobile (terrestrial) services on a primary basis. Also U.S. footnote No. RR 723 gives aeronautical

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<sup>21</sup>See ITU-R (Doc. 7C/TEMP/4 (Rev2) and associated annexes to Doc. 7C/TEMP/5 (Rev 1).